

NOTES ON AN ADULT GOBLIN SHARK (MITSUKURINA
OWSTONI) OF JAPAN.

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In 1897 Prof. Kakichi Mitsukuri, of the University of Tokyo, Japan, brought to the United States one of the most remarkable of living sharks and placed it in the hands of Dr. David S. Jordan, who made it the type of a distinct family of lamnoid sharks (Mitsukurinidae). The specimen was a young male, being but 42 inches long, and the 11-foot adult female which is the subject of this sketch shows quite a difference in the proportion of certain parts. The rostral appendage and caudal fin of the adult are relatively shorter than those of the young. In the latter (the type) the distance from tip of rostral appendage to eye slightly exceeds that from eye to last gill-opening, while in the adult it is contained one and one-third times in this distance; the tail of the type is contained but two and three-fourths times in the total length; in the adult, three and one-third times in this same length. The depth of body in the young animal is much greater proportionately than in the adult. As will be seen by the illustration, the body is remarkably short, only as long as the head in the young, and the head of the adult is two-thirds as long as the body.

Mr. Owston in forwarding this shark to the National Museum wrote that it was the longest so far obtained, and that they are taken mostly at Kosu, near Odawara, latitude $35^{\circ} 16'$ north, longitude $139^{\circ} 17'$ east, where there is a bank of 52 fathoms depth and depths of from 300 to 400 fathoms close by. Mostly females are taken, and in the spring-time only. It is thought that they resort to the bank to breed.

The shark appears to be fairly well known only at the exact locality given; the fishermen style it Tengu-zame, meaning goblin or elfin shark. They are caught in Naname (7-mesh) nets. Oil is extracted from the liver, and the flesh is used only for fertilizing purposes. A small one has been taken at Okinose, 10 miles south of Misaki, and others, too, have been taken on shark lines along the coast of Izu.

The following measurements were made by the writer and his son George before the shark was skinned:



FIG. 1.—GOBLIN SHARK, *MITSURURINA OWSTONI*.

Total length, 41 feet; depth at origin of pectoral, 12 inches; depth at first dorsal, 11 inches; tip of snout to eye, $17\frac{1}{2}$ inches; tip of snout to anterior edge of first gill-opening, $27\frac{1}{2}$ inches; tip of snout to base of first dorsal, $46\frac{1}{2}$ inches; length of upper margin of tail, 39 inches; lower margin to notch, 28 inches; length of rostral appendage underneath, 12 inches; width of rostral appendage, 6 inches; width at spiracles, $7\frac{1}{2}$ inches; width between the eyes, $8\frac{1}{2}$ inches; diameter of eye, $1\frac{1}{2}$ inches; spiracle, $1\frac{1}{2}$ inches wide, $3\frac{1}{2}$ inches from front of eye and on line with it. Upper jaw grooved and prolonged beyond the lower jaw, which is deeper grooved at the synthesis than the upper. There are four rows of visible teeth, the inner row partly embedded in the flesh. Teeth long and slender, sharp-pointed, curved and recurved, and having a double base; more numerous and longer at the extremity of the jaws than posteriorly. Longest teeth in upper jaw, seven-eighths of an inch; longest in lower jaw, 1 inch. Five gill-openings.

The fin measurements in inches are as follows: Base of first dorsal, $7\frac{1}{2}$; height of first dorsal, 10; width of end of first dorsal, $3\frac{1}{4}$. The second dorsal is immediately over the space between ventrals and anal, its base, 5; height, 8; width of end, 4. Pectoral, length of outer margin, 13; inner margin, 9; and width of tip, 7. Ventral, length of base, 12; length of anterior margin, 9; width of tip, $9\frac{1}{2}$. Anal, base, 12.

The basal bones of the fins count as follows: Pectoral, 16; ventral, 23; anal, 23; second dorsal, 12.

The specimen is now preserved in the U. S. National Museum as a dried skin and a partial skeleton preserved in alcohol. It is Cat. No. 50972, U.S.N.M., and bears the following label:

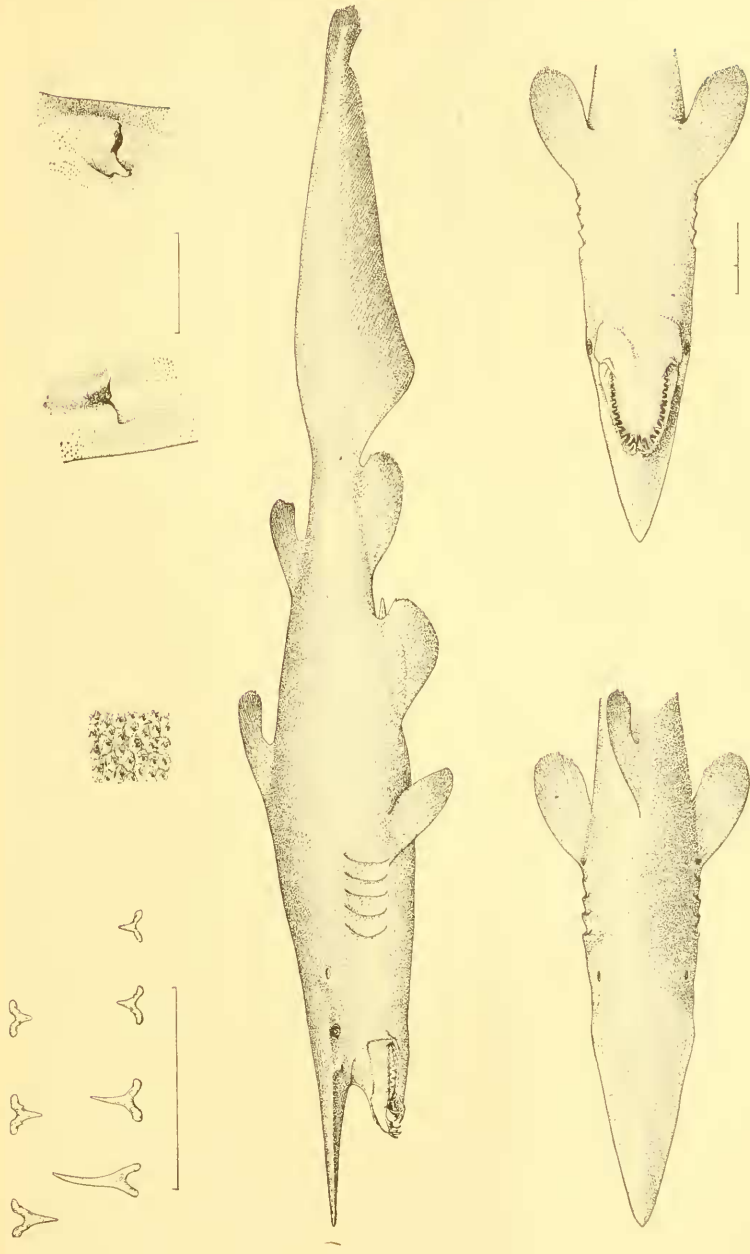


FIG. 2.—MITSUKURINA OWSTONI JORDAN, YOUNG MALE, TYPE.

Mitsukurina owstoni, collected for Alan Owston, of Yokohama, Japan, February 26, 1903, between Umezawa and Mayegawa, near Kosu, Sagami Bay, Japan, at a depth of from 150 to 200 fathoms. Purchased through Dr. D. S. Jordan.

The cut from a photograph by Mr. Smillie gives a very good idea of the appearance of this shark when received in Washington; it was preserved in formalin and reached us frozen quite stiff. The taxidermist, Mr. Turner, says the skin is in good condition for mounting. I understand from recent travelers to Japan that Mr. Owston has a good series of this shark on hand, ranging in length from 4 to 10 feet.

For the purpose of comparison Plate XXVI from volume 26 of the Proceedings of the U. S. National Museum is here reproduced so that the reader may readily see for himself the difference between the specimens of the young and the adult Goblin Shark.

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